

A. S. C. E.

**National Meeting of
Hydraulics Division**

INSPECTION TRIP

BOSTON HARBOR, MASS.

27 AUGUST 1957



U.S. Army Engineer Division, New England

Corps of Engineers

Boston, Mass.

CORPS OF ENGINEERS, U. S. ARMY
Office of the Division Engineer
New England Division
150 Causeway Street
Boston 14, Mass.

27 August 1957

Ladies and Gentlemen:

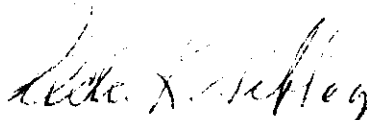
14137257 ✓
It is a pleasure for me to welcome members of the American Society of Civil Engineers and their wives and families on this tour of historic Boston Harbor. I sincerely hope that you will enjoy your trip as you see the various points of interest.

I know that Colonel Stanley W. Dziuban, who will accompany you as my deputy division engineer for New England, and Captain Harold Gardner of the Army Engineers' boat the "Cheney" and Captain George Lauriat of the pilot boat, "Rosemary" will do everything possible to make your tour a pleasant one.

Please feel free to ask any questions you may have in mind pertaining to the various piers and installations you will see. My representatives and those of the Port of Boston, who are kindly assisting us on this tour, will be glad to answer any queries you may have.

The attached information relative to the historic sites and those which have been recently built and rehabilitated has been prepared especially for you. I hope that you will find it interesting.

Sincerely,



ALDEN K. SIBLEY
Brigadier General, U. S. Army
Division Engineer

CHARLESTOWN

required by the Treasury Department. The entire terminal is enclosed with a chain link type of fence, providing adequate and proper security for the cargo and facilities within. The transit cargo shed has flush tracks for shipside loading on the side berths, with a double track in a depressed well along the center of the shed. Truck docks or loading platforms, along with the offices for Customs, the steamship operators, terminal operators, and stevedores, warm rooms, and the ramps for truck entrance into the pier shed, are located at the land end of the building.

An adjunct of the pier facilities is a building known as the battery-charging building, which is located on the westerly end of the terminal. This building provides facilities for the repair of pier cargo-handling equipment, charging of battery-operated equipment, and a large hall for shaping of longshoremen for work on the pier. There is also a large open area adjacent to the pier for the parking of vehicles.

The grain handling facilities have been modernized by increasing the shiploading capacity to thirty thousand bushels per hour, and providing equipment for the bagging of grain at the rate of about forty-five tons per hour. The shiploading capacity of the old system was approximately ten thousand bushels per hour, and the bagging was done manually in the hold of the ship. Under the present system the bagging is done in the pier shed with complete portable sacking units. The rehabilitation of this grain facility places the Port of Boston on a competitive basis with other major ports along the Atlantic Coast.

HOOSAC PIER NO. 1

CHARLESTOWN

The operating efficiency of the new Hoosac Pier has been highly prized by shipping and transportation interests. The wide aprons, apron night lighting, the excellent natural and artificial lighting of the shed interior, column and truss clearance, and many other outstanding operating features, have greatly reduced the turn-around time of ships using this facility, in comparison with the time formerly taken at other terminal facilities in the Port. There is no congestion of trucks that are waiting to load cargo, such as is found at other piers. Trucks can be loaded simultaneously at truck docks at the front of the building and in the transit shed, where a two-way traffic pattern can be attained.

THE UNITED STATES FRIGATE "CONSTITUTION"

Chronology

- 1794-1797 Under construction at Hartt's Shipyard, Boston.
- 1798 Congress votes March 27 to fit her out for sea.
- 1798-1801 Cruising in West Indies.
- 1801-1803 Laid up at New York.
- 1803-1806 Flagship, Mediterranean squadron, Tripolitan War.
- 1806-1810 Cruising in Mediterranean and West Indies.
- 1811-1812 Cruise to Europe. Repairs at Washington Navy Yard.
- 1812-1812 War with Great Britain.
- 1812 July 17, escapes from squadron of seven British ships.
August 19, captures frigate Guerriers.
December 29, captures frigate Java and five smaller vessels.
- 1813 Overhauled at U. S. Navy Yard, Boston.
- 1814 February-April, captures Picton and three smaller vessels.
Escapes into Marblehead from two larger frigates.
Blockaded at Boston for eight months.
- 1815 February 20, captures Cyane and Levant.
- 1815-1821 Laid up at U. S. Navy Yard, Boston. Repaired.
- 1821-1828 Flagship, Mediterranean squadron.
- 1828-1830 Laid up at Boston. Condemned by naval commissioners.
Saved by poem of Oliver Wendell Holmes.
- 1833-1834 First ship to enter new dry dock at Boston, June 24, 1833.
Repaired.
Difficulty over figurehead representing Andrew Jackson.
- 1835-1838 Flagship, Mediterranean squadron.

THE UNITED STATES FRIGATE "CONSTITUTION"

Chronology

1839-1841	Flagship, Pacific squadron.
1842-1843	Flagship, Atlantic squadron.
1844-1846	Cruise to East Indies, Pacific Ocean and Coast of Brazil.
1848-1851	Flagship, Mediterranean and African squadron; visited by Pope Pius IX.
1851-1852	Laid up at New York.
1852-1855	Flagship, Mediterranean squadron, for last time.
1855-1860	Laid up at the U. S. Navy Yard, Portsmouth, N.H., until reconditioned as a school ship.
1860-1871	School ship for midshipmen at Annapolis, Md. (and Newport, R.I., during Civil War).
1871-1875	Hauled out and rebuilt at U. S. Navy Yard, Philadelphia.
1876-1878	Training Ship at Philadelphia yard.
1878-1879	Last cruise in foreign waters. Carried to Havre, France, United States exhibits for Paris Exposition. Ran aground at Swanage Point, England. Salvaged with aid of England Navy.
1879	May 24, arrived home in New York.
1879-1881	Training ship for apprentice boys.
1882-1897	Laid up at the U. S. Navy Yard, Portsmouth, N.H., serving part of the time as receiving ship.
1897	October 21, arrived at Navy Yard, Boston, for celebration of her 100th birthday.
1897-1900	Permanently on exhibition at the U. S. Navy Yard, Boston.
1900	February 14, repairs authorized by Congress. Money to be donated. Response only a few hundred dollars.
1905	Navy recommends using decaying hull for target. Popular sentiment aroused to prevent this.

THE UNITED STATES FRIGATE "CONSTITUTION"

Chronology

1906	Congress votes \$100,000 for repairs and restoration.
1907-1908	Topsides restored. New spars, etc., but vessel not docked.
1909-1925	On exhibition at the U. S. Navy Yard, Boston
1925	March 4, Congress authorized restoration, money to be raised by popular subscription.
1925-1927	Campaign for funds. For the first time a complete set of plans of the ship are commenced.
1927	June 16, docked for complete reconstruction in same dock she was the first to enter, June 24, 1833.

BOSTON NAVAL SHIPYARD

The depredations of Algerian corsairs upon our mercantile marine and the spoilation to which our commerce was being subjected by both British and French ships of war caused the Congress of the United States in 1797 to consider the establishment of government shipyards. On April 30, 1798, the Navy Department was established.

In April of 1800, the Honorable Benjamin Stodert, the first Secretary of the Navy, wrote to the President, John Adams: "At Boston, the old yard (Hart's Naval Yard, presently Constitution Wharf, building yard of the USS CONSTITUTION) besides being private property, and too confined to contain the timber of a 74-gun ship, is so much surrounded by wooden houses as to be thought too dangerous a situation for building a valuable ship, especially a ship that might remain long upon the stocks. At this place, or rather at Charlestown, there is a very proper situation for a building yard, but the ground necessary for the purpose cannot be obtained for less than eighteen thousand dollars." The place chosen was that point of land (Moulton's Point) at which the British had landed prior to the Battle of Bunker Hill. The original shore line was considerably inshore from the present one.

The first ship constructed at the new yard, which was officially established on August 26, 1800, was the 18-gun sloop FROLIC, completed in 1813. The second ship, INDEPENDENCE, a 74-gun ship of the line, completed in 1814, was the flagship of Commodore Bainbridge in the Algerian operations in 1815.

The No. 1 Dry Dock of the Boston Naval Shipyard, sometimes referred to as Constitution Dock, is built of granite and was completed in 1833. The Frigate CONSTITUTION was the first ship to enter this dry dock.

The Boston Naval Shipyard has the privilege of berthing and maintaining the Navy's most important historic monument, the USS CONSTITUTION (Old Ironsides). This ship is open for general visiting every day throughout the year from 9:30 a.m. to 4:00 p.m. The CONSTITUTION, symbolic of not only United States naval tradition but also New England shipbuilding, is the only naval relic of her age still afloat.

The Boston Naval Shipyard is a component of the U. S. Naval Base, Boston, Massachusetts, which in turn is under the command of the Commandant, First Naval District. The First Naval District comprises the states of Maine, New Hampshire, Vermont, Massachusetts and Rhode Island (including Block Island.)

The Shipyard consists of the Charlestown Yard where the majority of the shops are located, the South Boston Annex which contains one of the World's largest dry docks, and the Fuel Annex in East Boston.

The Shipyard designs, builds, alters and repairs naval ships of various types and sizes. It's building ways, however, are limited to destroyer size or smaller. The Supply Department furnishes the materials required for the Shipyard work, the Fleet in this area and all naval shore activities in the District. The Shipyard also furnishes other logistic support to the Fleet, such as medical and dental care for the personnel of the ships in the Yard, fuel for the ships, pilot and tug services.

The mission of a shipyard is logistic support of the Operating Forces of the U. S. Navy. The personnel of this Yard, both military and civilian, are determined to accomplish all phases of that mission efficiently and economically. The Shipyard employees are proud of the Yard's reputation for doing its job thoroughly and expeditiously. If it is Boston built - it is well built!

MYSTIC PIER NO. 1

This pier was placed in service in August, 1952, and it marked the finish of the second step in the Port of Boston Commission's Master Plan for the rehabilitation of the Port Terminal facilities. The new Pier was built on the site of former Piers 46 and 47, and it is operated by the Mystic Terminal Company, the marine subsidiary of the Boston and Maine Railroad.

Basically, the new Pier is similar to Hoosac Pier No. 1, being purely functional in character. The Pier is approximately 900 ft. long by 468 ft. wide, and the single-deck transit shed, constructed entirely of fire-resistant materials, has covered floor space of about 246,000 sq. ft. The Pier has a berth capacity for three deep-water vessels at berths supported by the transit shed, and one open berth on the South side for tie-up or bulk-cargo operations. All berths have available 35 ft. at M.L.W. Rail access is secured by three tracks in a depressed well in the shed center, and flush tracks on the North and South working aprons. Two canopied car unloading or loading platforms, one on each side of the track well, with a capacity of six cars each, project from the front end of the transit shed. Two truck loading docks, tailboard height, are located at the inshore end and ramps on both sides provide easy access for trucks into the transit shed. The inshore end of the building, on both the North and South sides, contain offices, warm rooms, gear lockers and other pertinent facilities for the use of Customs, steamship operators and stevedores.

FACTS ON \$27,000,000 MYSTIC RIVER BRIDGE

Largest in New England -- more than two miles long (11,906 feet from grade to grade).

Estimated annual traffic: 12,294,467 in 1956

Estimated revenue: \$2,164,497 in 1956

Double-deck cantilever structure -- three lanes of traffic on each deck (roadway 42 feet wide).

North-bound traffic (to Chelsea) on lower level -- South bound traffic (to Boston) on upper level.

Main span over Mystic River is 800 feet long and 135 feet above mean high water.

Toll plaza located over Boston and Maine Railroad yards between main span and the span over Little Mystic Channel.

Passenger car toll rates is 15 cents for single, 10 cents with commutation sticker...maximum of 40 cents for trucks.

Bonds expected to be liquidated in 1978 and the bridge control transferred to the State Department of Public Works for operation without tolls.

1000 men and over 50,000 tons of steel was required in construction.

Bridge was completed in February 1950.

It was opened February 27, 1950.

BUNKER HILL

One of the most famous battles in the Revolution took place in Charlestown on what comes down to us in history as Bunker Hill which took place on June 16, 1775.

The Bunker Hill monument stands high above the spot where a courageous band of men banded together with whatever weapons they could find to stave off the assault of the British.

The U. S. Army Corps of Engineer's history of fighting and building for America began in 1775 in New England -- in Boston, in fact -- when General George Washington, under the authority of the Continental Congress, appointed Richard Gridley, a former British Crown officer, first chief engineer of the Continental Army.

Building became the first duty for Gridley and his hastily assembled band of assistants as they spent the night of June 16, 1775, fortifying Breed's Hill in nearby Charlestown against the impending assaults by the King's riflemen from the British men o' war anchored off shore. And it was fighting which followed the next day as Gridley and his men exchanged their picks and shovels for muskets to join in the defense of Bunker Hill.

A tradition established that day and memorialized with Gridley himself being wounded has been richly endowed throughout the years and the length and breath of the Globe by the fighting and building exploits of the Corps. From that hardy band which crouched behind the newly-erected breastworks that silhouetted the Charlestown skyline on that first Bunker Hill Day there emerged an organization of 750,000 men during World War II which suffered more than 30,000 casualties during that war.

LOGAN INTERNATIONAL AIRPORT

Within slightly more than three decades, Logan International Airport has flourished from an inauspicious beginning as a 189-acre cinder patch to a leading air capital accommodating more than a million and a half passengers annually.

Logan International, following a tremendous expansion program in the 1940's, now measures 2,000 acres. Much of this miracle of engineering was accomplished by sucking mud and silt - 40 million cubic yards of it - from the floor of Boston Harbor. Onto this created land were erected terminal facilities that were ideally designed for the comfort and convenience of air passengers. A long wide series of runways were augmented with the latest in air navigation aids, earning Logan the reputation of being "the world's safest airport."

Guiding the course of its development is the State Airport Management Board, a body of five unpaid business and professional leaders who took over a deficit-ridden operation in 1948. Their collective acumen is responsible for an annual surplus over operating and maintenance costs of close to thirty per cent. As of May 1957, for example, the S.A.M.B. reported earned income at Logan of \$1,568,952. Operating and maintenance costs during the period were exceeded by \$817,382.

The current expansion and improvement program finds the new \$2,500,000 hangar being used by American Airlines and the \$850,000 control tower completed and in operation. To say that things at Logan are "zooming" is more than speaking in the vernacular.

Air freight plays an important role at this unique airport, wherein it is possible to make both international and domestic connections on the

one field. Air shipments handled at Logan during the fiscal year ending June 30, 1957 will approximate 35,875,950. Individual months in this category have occasionally shown increases amounting to 100 per cent or better over comparable months in the preceding year.

The nature of the decentralized-type terminal at Logan International Airport is an advantage enjoyed at few of the world's airports. It houses under one roof all domestic and international scheduled air services, consequently eliminating all inconvenient, expensive and time-consuming airport-to-airport transfer. A few yards from the spot where a passenger may deplane, he finds a wide divergence of ground transportation facilities to speed him to his ultimate destination. There is even a bus to the nearby MTA airport station.

This terminal is often described as a city under one roof - and it is exactly that. Here may be found three restaurants, two lounge bars, a barber shop, florist shop, telegraph office, bank, express office, periodicals stand, medical office, insurance centers, a chapel, parking lots, bus, taxi, limousine and car rental service . . . even a shop where live, native lobsters are especially packed in carry-on kits for flights anywhere in the country. These facilities are in addition to the operational quarters and lobbies of thirteen passenger airlines, State Police, the U. S. Weather Bureau and other State and Federal offices.

Moreover, Logan is no more than eight to ten minutes travel from other important connecting transportation services in the downtown Boston area. Time is saved for overseas travelers in customs at Logan; for the set-up in the International Section is so efficient that passengers are cleared nearly as swiftly as are domestic travelers. If time is valuable, Logan is every man's goldmine.

THE WORLD'S FIRST AIRPORT CHAPEL

East Boston's Logan International airport is graced by the first airport chapel in the world.

The chapel of Our Lady of the Airways located at Gate 11 of the main terminal building was dedicated by Archbishop Cushing on January 20, 1952.

This refuge offers a solemn "hushed" atmosphere surpassed by few Cathedrals or rural churches. Paradoxically the chapel designed by architects Maginnis & Walsh and the appointments by the Rambush Decorating Co. are most modern.

The central structural column that backs the altar is tapered to suggest airplane wings or fuselage.

The Our Lady of the Airways statue which impends from it is impressionistic rather than an academic depiction.

BOSTON HARBOR, MASSACHUSETTS

CONDITION OF IMPROVEMENT: 30 June 1956

The Existing Project was first adopted in 1825 and has been supplemented by enactments to 1946 and provides for:

- (a) A channel 40 feet deep in general, but 45 feet through rock, 900 feet wide, widening at the outer end to 1100 feet from the sea to President Roads, through Broad Sound.
- (b) Deepening to 40 feet the main ship channel from President Roads to about 200 feet northerly of the site of the Mystic Pier No. 1, Charlestown, having widths varying from 600 feet to 1200 feet with suitable widening at the bends. Length about 5.5 miles.
- (c) Deepening to 40 feet that part of the approach channel to the U. S. Navy Drydock at South Boston between the main ship channel and the U. S. Harbor line.
- (d) An anchorage 2000 by 5500 feet and 40 feet deep on the north side of President Roads.
- (e) Extension of the President Roads Anchorage 700 feet to the north and 500 feet to the west at a depth of 40 feet, and dredging to 35 feet an area lying west of the anchorage.
- (f) A channel 35 feet deep along the same line as the 40-foot main ship channel in the following manner, adjacent to the westerly side of the 40-foot main ship channel through Broad Sound, 600 feet wide, a distance of about 2 miles; adjacent to the northerly side of the 40-foot main ship channel from President Roads to abreast the Fish Pier, 600 feet wide, a distance of about 3 miles; adjacent the westerly side of the 40-foot main ship channel from abreast Fort Point Channel to the Charlestown Bridge at the entrance to Charles River, to the Mystic River Bridge and to the new Meridian Street Bridge, at the entrance to the Chelsea River, having widths varying from 100 feet to 1000 feet, a distance of about 2 miles.
- (g) A channel 30 feet deep, 2 miles long, 1200 feet wide from the sea to President Roads through Broad Sound by a less direct route than the 35 and the 40-foot channels.
- (h) A channel 27 feet deep and 1000 feet wide from Nantasket Roads to President Roads, known as the "Narrows" channel, 3 miles.
- (i) A channel 15 feet deep, 300 feet wide, and 550 feet long through the bar which extends from the north head of Long Island to Nixes Mate Shoal, known as "Nixes Mate" or "Nubble" channel.

- (j) A channel in Chelsea River 30 feet deep and generally 200 feet wide, from the mouth of the river at the head of the 35-foot channel in Boston Harbor to a point about one mile upstream of the Chelsea Street Bridge, a distance of about 2 miles, thence a channel 8.4 feet deep to the B&M R. R. Bridge 150 feet wide, a distance of about one-half mile.
- (k) Improvement of Reserved Channel east of L Street Bridge by a channel 30 feet deep and 300 feet wide.
- (l) The Fort Point Channel, 23 feet deep and 175 feet wide from its entrance in Boston Harbor to the Dorchester Avenue Bridge.
- (m) Sea walls of coursed stone and riprap protecting the most exposed headlands and islands.

The extension of the President Roads Anchorage is now under construction. A continuing contract was made with the Great Lakes Dredge & Dock Company of New York in September 1956, for the removal of an estimated 4,755,000 cubic yards of material. Work was started on 10 November 1956, and under the terms of the contract, is required to be completed by 9 June 1959, with the appropriation of sufficient funds. To date, approximately 1,300,000 cubic yards have been removed making the work about 36% completed. At the present time, the Great Lakes Dredge & Dock Company Dipper Dredge "Toledo", 16 cubic yards capacity, is at work. Three steel dump scows of 1,500 cubic yards capacity each are used in carrying the material to the sea dump outside Boston Light Ship about 13 miles round trip from the work.

CASTLE ISLAND

Castle Island adjacent to the Boston Army Base and during two world wars one of the most important military embarkation points for men and supplies to Europe is the oldest military fortress of the United States.

Its continuity as a landfall to the Port of Boston goes back to 1634.

This well-defended fortress was the most ancient military post in the United States, continuously occupied for defense, the flag of Saint George, the Pine-Tree Flag, the white flag of Massachusetts, and the Stars and Stripes all having been flown over its ramparts. This fortress was erected in 1634 by Governor Winthrop and his councillors, who decided that from this island only could the "First Church" be properly protected. The fort was destroyed by fire in 1763, being built mostly of tree stumps.

For two hundred years, this Island had been the main bulwark of the nation. Its first guns were placed in 1635, and the garrison fired the first shots ever fired in the colonies from a fortress gun in the same year on the ship "St. Patrick," forcing her to strike her colors.

After 1691, the Lieutenant-Governors became, ex-officio, Commanders of the Castle which for a few years, was known as Fort William and Mary.

In 1689, during the reign of King James, 5,000 New Englanders rose in arms against Sir Edmund Andros, King James' representative. They captured the castle and imprisoned Andros. He escaped, reached Rhode Island, and was captured.

The Baron languished eight months, a prisoner in the Island fort. Years later, he became Governor of Virginia and founded the William and Mary College.

In 1761, the remnants of the Acadian people came in vessels off the coast of the Island, and finally these mournful exiles were carried to sea.

From 1785 to 1805, it was the State Prison. In 1798, Massachusetts ceded Castle Island to the United States. President John Adams visited the island in 1799 and the name was changed to Fort Independence. Here was established the first public health hospital for mariners.

During the war of 1812, the Dorchester quota of militia was barracked there. It was discontinued in 1880. Many prominent figures in all the wars during the past three centuries were located there.

From the birth of the colonies until 1882, every pulse of the colony's and nation's struggle in warfare, and Indian uprisings, was centered on this island. No page in the history of the world is more interesting, more romantic, more true of a people's struggle for peace and tranquility than that pertaining to Castle Island in Boston Harbor.

Castle Island is one of the great modern port facilities of the North Atlantic Coast operated by the Commonwealth of Massachusetts through its Port of Boston Commission.

DESCRIPTION OF THE ARMY BASE

The Army Base extends about eight-tenths of a mile out into Boston from Summer Street and was constructed in less than one year during World War I, 1917-18. The largest building on it is the storehouse, a concrete frame building built on concrete caissons. It is eight stories in height and each floor contains just under 200,000 square feet.

In line with the storehouse, running east and west are the boiler plant, sub-station, administration building and several other smaller buildings.

Along the waterfront from left to right are the wharf shed, the south pier shed and directly opposite is the north pier shed. Between these buildings and the waters edge there are 10 berths for docking ships.

The wharf shed is over 1600 feet long, 100 feet wide and is of steel frame construction. The two pier sheds are over 900 feet long, 100 feet wide and are of the reinforced concrete frame construction.

Since 1925 marine borers have been very active in the attack on untreated wood piles which support the perimeter of the Army Base. By the early 1930's the wood piles had been damaged to a great extent and it became necessary to make repairs and prevent further damage. As the result of studies at that time the damaged piles were repaired and replaced and the entire perimeter of the base was surrounded by a steel sheep pile bulkhead and the inclosed area was filled with sand to the top of the wood piles. In 1953 it was discovered that holes in the steel piling were occurring at and just below the water line. After considerable study, the project now nearing completion was begun in 1956 and is now 98% complete.

BOSTON ARMY BASE JOB AN UNUSUAL ONE

A construction job during which 80 percent of the cement to be poured is under water is now nearing completion Boston Army Base, South Boston under the supervision of the New England Division, Corps of Engineers, U. S. Army.

The New York firm of Merritt, Chapman and Scott, one of the world's leading marine construction outfits, is pursuing the job of rehabilitating the wharf and warehouses. The entire project will cost \$11,000,000 with the State contributing \$1,000,000.

Major portion of the work consists in the construction of a concrete wall more than a mile long from the Summer Street entrance all around the base to the Navy pier. The wall is 50 feet high and 35 feet of it is below the mean low water mark. Mounted on steel piles driven into rock ledge at the bottom of the channel, the wall is 30 feet thick at its base tapering upward to 12 feet at the high water mark.

The new wall has a 27-foot cantilever apron to permit more dock span and in addition to the access area for loading and unloading cargo it has a railroad track and crane rails.

The cement job alone called for the expenditure of \$3 million dollars and involved the pouring of about 200,000 cubic yards of concrete. The wall is constructed in 100-foot sections with each section requiring 30 hours of continuous pouring once each pour is started. It required 3500 piles to support the wall.

ARMY BASE JOB AN UNUSUAL ONE (Cont'd)

A marine mixing plant provides the cement and aggregate which is towed across the harbor on barges from an unloading terminal in Chelsea.

In connection with the Army Base job the Army Engineers have permitted the contractor to use a relatively new ingredient known as "fly ash" to be mixed with the cement.

"Fly ash" is made from pulverized coal and is produced by specially designed boilers for power plants. It is a powderish substance which is captured by screens in smokestacks and, when mixed with cement, provides a more stable concrete in salt water.

Not only practical but more economical, "fly ash" has been brought into the construction field by the McNeil Bros. Co. of Stratford, Conn. and the New England Division of Army Engineers.

E N D

HISTORY OF ARMY ENGINEERS

The Army Engineers, unique among the world's military organizations in having from its earliest days a basic civil responsibility to promote American progress in times of both peace and war in addition to its vital military missions in times of war, have been identified with every history-making exploit in every era in America's history of freedom.

Army Engineers helped establish the nation during the Revolutionary War-- then built the forts and roads which helped to guard and unite it. They cleaved through the wilderness to open migration to the Golden West, fighting and pacifying the Indians every step of the way.

During the Civil War Army Engineers and their officers fought with gallantry on both sides and introduced new concepts into the varied fields of armed conflict. The Engineers constituted the vanguard of the American Expeditionary Forces in World War I and were among the first Americans to suffer battlefield losses. In World War II they were the first GI's to strike the Normandy beachhead as combat units while at home they opened new horizons of logistic capability in supporting and supplying all-out war at the same time on both sides of the world.

Road building and bridging feats of the Army Engineers in wartime tend to obscure to some extent the construction potentialities which the Corps developed during its long history and which were climaxed by almost unbelievable proportions during World War II.

The construction of thousands of command installations, hundreds of major industrial projects, Army camps, airfields and hospitals are breath-taking in post evaluation but were only a part of the voluminous number of jobs assigned to the Engineers.

Airfields construction overseas would cover 250,000 acres. In Europe 241 airfields were constructed prior to and after the invasion of the continent and in France 18 of these fields were completed for operational purposes during the first 40 days after the invasion. In the Southwest Pacific the Engineers transported millions of men and millions of tons of supplies shoreward in assault landings, constructed innumerable airbases and the support facilities for such, and relics of their countless other projects can be found along the chain of islands extending from Australia to Manila.

More important, perhaps, than any single effort of the Army Engineers in helping to bring World War II to a successful ending was the work of the Manhattan District of the Corps of Engineers in the epic assignment of developing, producing and delivering the Atom Bomb.

Peacetime exploits of the Army Engineers are almost as old as the Nation itself. At West Point, New York, as early as 1802 the Corps established the first engineering school in America. For more than 60 years the Military Academy as it is now known was the font of learning for almost all American engineers and it was Corps of Engineer alumni who established, staffed and set the curricula for other American engineering schools.

In addition to helping with the internal improvements of the young nation the Corps built lighthouses along coastlines to safeguard maritime trade and harbor forts to withstand enemy aggression. Assistance afforded by the Army Engineers had a marked influence in the construction and extension of the country's railroads and became the most dominating force in the controlling of water resources for flood protection, improved river navigation, soil irrigation, power development and industrial expansion.

Army Engineer peacetime activities, geared as they must be to dual military and civil responsibilities, have, nevertheless, with the advancing years, mushroomed into a multitude of technological fields.

The Engineer School at Fort Belvoir, Virginia, utilizes the skill and experience of nearly 2000 persons in the research and development of modern technological advancement in almost all fields of endeavor while at the same time losing no opportunity to steer such advancement into a military environment.

The Corps maintains the Army Map Service at Washington, D. C., the largest mapping operation in the world. Its Waterways Experiment Station at Vicksburg, Mississippi, is able to recreate in workable scale models the most difficult of hydrological problems. And, at Wilmette, Illinois, the Snow, Ice, Permafrost Research Establishment (SIPRE) of the Army Engineers is conducting basic and applied research on the properties of snow, ice, seasonal and perennial frozen ground with specific relationship to the environments on and under land surfaces and landlocked bodies of water - - studies which should have considerable importance in the construction of defense bases in polar regions.

